

Tfw

ATTORNEY DOCKET NO.  
11321-P059WOUS



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Barrera et al.

Serial No.: 10/536,688

Filing Date: May 27, 2005

Art Unit: Unknown

Title: *Functionalized Carbon Nanotube-Polymer Composites and Interactions with Radiation*

Mail Stop: Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

**INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. § 1.97(b)**

Applicant hereby submits the following references in accordance with 37 C.F.R. §§ 1.56, 1.97 and 1.98. Copies of the referenced cited in the attached PTO/SB/08B are enclosed for the examiner's reference. Furthermore, pursuant to 37 C.F.R. § 1.97(g) and (h), no representation is made that this is material to patentability of the present application or that a search has been made.

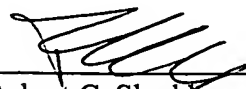
Applicant hereby submits that claims of Applicant's referenced patent application are patentably distinguishable from these references.

Applicant does not believe that any fees are due at this time; however, if fees are necessary, the Director of Patents and Trademarks is hereby authorized to charge any fees relating to this Information Disclosure Statement under 37 CFR § 1.17 to Deposit Account No 23-2426 of WINSTEAD SECHREST & MINICK P.C. (referencing matter 11321-P059WOUS).

ATTORNEY DOCKET NO.  
11321-P059WOUS

Respectfully submitted,

Date: 2/14/06

  
\_\_\_\_\_  
Robert C. Shaddox  
Regis No. 34,011

WINSTEAD SECHREST & MINICK P.C.  
P.O. Box 50784  
Dallas, Texas 75201  
Phone: 713.650.2764  
Fax: 214.745.5390

#### CERTIFICATE OF MAILING

I hereby certify that the attached Information Disclosure Statement and cited art are being deposited with the USPS, with sufficient postage, as first class mail, addressed to Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this the 14<sup>th</sup> day of February, 2006.

2/14/06  
\_\_\_\_\_  
Date

  
\_\_\_\_\_  
Signature

837730v.1 11321/P059WOUS



PTO/SB/08A (04-03)

Approved for use through 04/30/2003. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

(Use as many sheets as necessary)

**Complete if Known**

Application Number	10/536,688
Filing Date	May 27, 2005
First Named Inventor	Barrera et al.
Art Unit	Unknown
Examiner Name	Unknown
Attorney Docket Number	11321-P059W0US

Sheet	1	of	5
-------	---	----	---

## U. S. PATENT DOCUMENTS

[illegible]

## FOREIGN PATENT DOCUMENTS

[illegible]

Examiner Signature		Date Considered	
-----------------------	--	--------------------	--

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. <sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Washington, DC 20231.

**If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.**

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

**Complete if Known**

<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (Use as many sheets as necessary)	<b>Application Number</b>		10/536,688		
	<b>Filing Date</b>		May 27, 2005		
	<b>First Named Inventor</b>		Barrera et al.		
	<b>Art Unit</b>		Unknown		
	<b>Examiner Name</b>		Unknown		
<b>Sheet</b>	2	of	5	<b>Attorney Docket Number</b>	11321-P059WOUS

**NON PATENT LITERATURE DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	3	Iijima, "Helical microtubules of graphitic carbon", 354 Nature (1991) pp. 56-58	
	4	Iijima et al., "Single-shell carbon nanotubes of 1nm diameter", 363 Nature (1993) pp. 603-605	
	5	Bethune et al., "cobalt-catalysed growth of carbon nanotubes with single-atomic-layer walls", 363 Nature (1993), pp. 605-607, 1993	
	6	Barrera, "Key Methods for Developing Single-Wall Nanotube Composites" 52 J. of Mater. (Nov. 2000), pp. 38-42, 2000	
	7	Thess et al., "Crystalline Ropes of Metallic Carbon Nanotubes", 273 Science (1996), pp. 483-487, 1996	
	8	Hone et al., "Electrical and thermal transport properties of magnetically aligned single wall carbon nanotube films", 77 Appl. Phys. Lett. (2000), pp. 666-668	
	9	Yu et al., "Tensile Loading of Ropes of Single Wall Carbon Nanotubes and their Mechanical Properties", 84 Phys. Rev. Lett. (2000), pp. 5552-5555	
	10	O'Rourke, "Effects of gamma radiation on poly(methyl methacrylate)/single-wall nanotube composites", 17 J. Mater. Res. 10 (2002). pp. 2507-13	
	11	Klimov et al., "Monochromatic gamma radiation emitted by relativistic electron moving in a carbon nanotube", 226 Physics Letters A (1997), pp. 244-252	
	12	Cui et al., "Atomistic simulation of radiation damage to carbon nanotube", 295 Physics Letters A (2002), pp. 55-59	

Examiner  
SignatureDate  
Considered

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 120 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Washington, DC 20231.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

**Complete if Known**

<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (Use as many sheets as necessary)	<b>Application Number</b>		10/536,688		
	<b>Filing Date</b>		May 27, 2005		
	<b>First Named Inventor</b>		Barrera et al.		
	<b>Art Unit</b>		Unknown		
	<b>Examiner Name</b>		Unknown		
<b>Sheet</b>	3	of	5	<b>Attorney Docket Number</b>	11321-P059WOUS

**NON PATENT LITERATURE DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	13	Salonen et al., "Ion-irradiation-induced defects in bundles of carbon nanotubes" 193 Nuclear Instruments and Method in Physics Research B, (2002), pp. 603-608	
	14	Ye et al., "Hydrogen adsorption and cohesive energy of single-walled carbon nanotubes" 74 Appl. Phys. Lett. 16, (1999), pp. 2307-2309	
	15	Wilson et al. (Eds.), Shielding Strategies for Human Space Exploration, NASA Conference publication 3360 (1997), pp. 17-28	
	16	Liu et al., "Fullerene Pipes", 280 Science (1998), pp. 1253-1256	
	17	Bahr et al., "Functionalization of Carbon Nanotubes by Electrochemical Reduction of Aryl Diazonium Salts: A Bucky Paper Electrode", 123 J. Am. Chem. Soc. (2001), pp. 6536-6542	
	18	Holzinger et al., "Sidewall Functionalization of Carbon Nanotubes" 40 Angew. Chem. Int. Ed. 21 (2001), pp. 4002-4005	
	19	Khabashesku et al., "Fluorination of single-wall carbon nanotubes and subsequent derivatization reactions", 35 Acc. Chem. Res. (2002), pp. 1087-1095	
	20	Mickelson et al., "Solvation of Fluorinated Single-Wall Carbon Nanotubes in Alcohol Solvents", 103 J. Phys. Chem. B (1999), pp. 4318-4322	
	21	Boul et al., "Reversible sidewall functionalization of buckytubes" 310 Chem. Phys. Lett. (1999), pp. 367-372	
	22	Ebbesen, "Carbon Nanotubes", 24 Annu. Rev. Mater. Sci., (1994), pp. 235-264	

<b>Examiner Signature</b>		<b>Date Considered</b>	
---------------------------	--	------------------------	--

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 120 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Washington, DC 20231.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

**Complete if Known**

<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (Use as many sheets as necessary)	<b>Application Number</b>		10/536,688		
	<b>Filing Date</b>		May 27, 2005		
	<b>First Named Inventor</b>		Barrera et al.		
	<b>Art Unit</b>		Unknown		
	<b>Examiner Name</b>		Unknown		
<b>Sheet</b>	4	of	5	<b>Attorney Docket Number</b>	11321-P059WOUS

**NON PATENT LITERATURE DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	23	Vander Wal et al., "Flame synthesis of Fe catalyzed single-wall carbon nanotubes and Ni catalyzed nanofibers:...", 349 Chem. Phys. Lett. (2001), pp. 178-184	
	24	Hafner et al., "Catalytic growth of single-wall carbon nanotubes from metal particles", 296 Chem. Phys. Lett. (1998), pp. 195-202	
	25	Cheng et al., "Bulk morphology and diameter distribution of single-walled carbon nanotubes.." 289 Chem. Phys. Lett. (1998), pp. 602-610	
	26	Nikolaev et al., "Gas-phase catalytic growth of single-walled carbon nanotubes from carbon monoxide", 313 Chem. Phys. Lett. (1999), pp. 91-97	
	27	O'Connell et al., "Band Gap Fluorescence from Individual Single-Walled Carbon Nanotubes", 297 Science (2002), pp. 593-596	
	28	Bachilo et al., "Structure-Assigned Optical Spectra of Single-Walled Carbon Nanotubes" 298 Science (2002), pp. 2361-2366	
	29	Strano et al., "Electronic Structure Control of Single-Walled Carbon Nanotube Functionalization" 301 Science (2003), pp. 1519-1522	
	30	Chiang et al., "Purification and Characterization of Single-Wall Carbon Nanotubes", 105 J. Phys. Chem. B (2001), pp. 1157-1161	
	31	Chiang et al., "Purification and Characterization of Single-Wall Carbon Nanotubes Obtained from the Gas-Phase...", 105 J. Phys. Chem. B (2001), pp. 8297-8301	
	32	Gu et al., "Cutting Single-Wall Carbon Nanotubes through Fluorination", 2 Nano Lett. 9, (2002), pp. 1009-1013	

**Examiner  
Signature****Date  
Considered**

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 120 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Washington, DC 20231.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO  <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  <i>(Use as many sheets as necessary)</i>		<b>Complete if Known</b>	
		Application Number	10/536,688
		Filing Date	May 27, 2005
		First Named Inventor	Barrera et al.
		Art Unit	Unknown
		Examiner Name	Unknown
Sheet	5	of	5
		Attorney Docket Number	11321-P059WOUS

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	33	Chen et al., "Solution-Properties of Single-Walled Carbon Nanotubes", 282 Science (1998), pp. 95-98	
	34	Mickelson et al., "Fluorination of single-wall carbon nanotubes", 296 Chem. Phys. Lett. (1998), pp. 188-194	
	35	Bahr et al., "Highly Functionalized Carbon nanotubes Using In Situ generated Diazonium Compounds", 13 Chem. Mater. (2001), pp. 3823-3824	
	36	Stevens et al., "Sidewall Amino-Functionalization of Single-Walled Carbon Nanotubes through Fluorination...", 3 Nano Lett. 3 (2003), pp. 331-336	
	37	Pekker et al., "Hydrogenation of Carbon Nanotubes and Graphite in Liquid Ammonia", 105 J. Phys. Chem. B (2001), pp. 7938-43	
	38	Rinzler et al, "Large-scale purification of single-wall carbon nanotubes: process, product, and characterization", 67 Appl. Phys. A (1998), pp. 29-37	
	39	Bronikowski et al., "Gas-phase production fo carbon single-walled nanotubes from carbon monoxide via the HiPco process...", 19 J. Vac. Sci. Technol. 4 (2001), pp. 1800-1805	
	40	Chiang et al., "Covalent Sidewall Functionalization of Single-Wall Carbon Nanotubes", proc. of 6th Appl. Diamond Conf. (2001), pp. 687-693	
	41	Cooper et al., "Distribution and alignment of carbon nanotubes and nanofibrils in a polymer matrix", 62 Composites Sci. & Technol. (2002), pp. 1105-12	

Examiner Signature	Date Considered
--------------------	-----------------

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 120 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Washington, DC 20231.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.